

REMARKS

In the Office Action dated October 22, 2003, the Examiner rejected claims 19, 22, 24 and 26-28 under 35 USC 102 as being anticipated by Nishiguchi (US Patent No. 5,214,308), rejected claim 23 under 35 USC 103 as unpatentable over Nishiguchi, rejected claims 20 and 25 under 35 USC 103 as unpatentable over Nishiguchi and Kato (US Patent No. 6,486,562), rejected claim 21 under 35 USC 103 as unpatentable over Nishiguchi and Morihara (US Patent No. 5,495,439), rejected claims 29-31 under 35 USC 103 as unpatentable over Nishiguchi, rejected claims 32-34 under 35 USC 103 as unpatentable over Nishiguchi and Chiu (US Patent No. 6,391,683), rejected claims 35, 36, 37, and 39 under 35 USC 103 as unpatentable over Nishiguchi and Holzapfel (US Patent No. 5,872,633), rejected claim 38 under 35 USC 103 as unpatentable over Nishiguchi, Holzapfel and Kato, rejected claims 40-42 under 35 USC 103 as unpatentable over Nishiguchi and Holzapfel, and rejected claim 43 under 35 USC 103 as unpatentable over Nishiguchi, Holzapfel and Chiu (US Patent 6,391,683). Claims 19 through 43 remain at issue.

The Art Rejections

Contrary to the Examiner's statements that all elements of claim 19 are taught by the Nishiguchi reference, the element of forming the at least partially cured underfill adhesive formed on the flip chip before the flip chip is mounted onto a substrate is not disclosed. Rather, Nishiguchi teaches just the opposite.

Specifically, the "bonding agent" of Nishiguchi is applied after the semiconductor device is mounted onto the substrate. Specifically, column 3 lines 46-52 state:

Instead of molting the bump 2, insulative bonding agent which contracts when it cures may be **filled into a gap between the semiconductor device 1 and the substrate 3** and the bump 2 may be pushed to the electrode terminal 5 by a curing contraction force of the bonding agent to electrically connect the bump 2 to the electrode terminal 5. (emphasis added)

Nishiguchi therefore explicitly teaches that the bonding agent is applied subsequent the semiconductor device being mounted onto the substrate. After mounting, the agent is then introduced into the gap.

The Applicants submit that claim 19 is therefore allowable. Although patentable in their own right, claims 20-34 and 38-42 are also allowable based on their dependency on claim 19. Finally, although not specifically addressed herein because it is believed to be not necessary, the Applicants disagree with the Examiner's reasons for rejecting claims 20-34 and 38-42. The Applicants failure to substantively address these rejections should not be construed in anyway as an admission by the Applicants as to the veracity of these rejections. The Applicants reserve the right to address these rejections at anytime in the future.

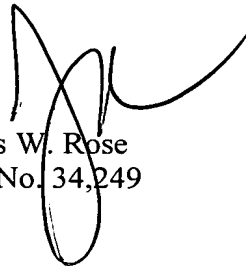
With regard to claim 35, the Examiner has also failed to show a prima facie case of obviousness. Claim 35 is directed to a semiconductor wafer with a layer of at least partially cured underfill adhesive formed on the active surface. In contrast, Nishiguchi teaches the filling of the gap between a semiconductor device and a substrate with a bonding agent. Holzapfel is directed to a polishing machine for removing layers from a wafer. There is absolutely no reason whatsoever to combine these references. In fact, the two references seem to contradict one another, and therefore can not be combined as the Examiner suggests. One is directed to forming a layer (bonding agent) onto a single semiconductor device. The other is directed to removing layers from the surface of a wafer.

The Applicants submit that claim 35 is therefore allowable. Although patentable in their own right, claims 36-37 are also allowable based on their dependency on claim 35. Finally, although not specifically addressed herein because it is believed not necessary, the Applicants disagree with the Examiner's reasons for rejecting claims 36-37. The Applicants failure to substantively address these rejections should not be construed in anyway as an admission by the

Applicants as to the veracity of these rejections. The Applicants reserve the right to address these rejections at anytime in the future.

Applicant believes that all pending claims are allowable and respectfully requests a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,
BEYER WEAVER & THOMAS, LLP

A handwritten signature in black ink, appearing to be 'J. W. Rose', written over a circular registration mark.

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